EPA

HEDDEN DUMP SITE
SANGAMO PCB STUDY
PICKENS, SOUTH CAROLINA
PROJECT NO. 87-032

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PICKENS COUNTY, SOUTH CAROLINA

INTRODUCTION

An investigation was conducted on October 29, 1986 at the Hedden Dump Site in Pickens County, South Carolina (Figures 1 and 2) by Messrs. Hugh Vick and Keith Bellville and Ms. Barbara Benoy of the US-EPA, Region IV, Environmental Services Division (ESD), and Messrs. Robert Morris and Scott Gardner, US-EPA, Region IV, Waste Management Division. Messrs. John Fields, Jr. and Dan Madison, consultants for Sangamo, were also present during the investigation. This study was part of a larger study conducted in the Pickens county area involving alleged former Sangamo Electric Company PCB dump sites.

The objectives of this investigation were to determine if PCB waste materials were present at this site, and if so, if PCBs had migrated into area streams or ground water.

SITE DESCRIPTION

The Hedden Dump Site (Figure 1) is bounded on three sides by City View Circle (Figure 2) and consists of the residences of Messrs. Randy Hedden, Roy Lay, and Donald Couch. Most of the land bounded by City View Circle is part of a ridge in that the land east and west of City View Circle slopes downward, away from the site. Waste was apparently disposed of on top of the ridge and covered with a thin layer of soil before the homes were constructed. All three of the residents have reported encountering capacitor and transformer type wastes when digging holes to plant shrubs and/or plowing gardens. The size of the area in which PCB wastes were allegedly disposed is unknown since, as described in the discussion section of this report, PCBs were detected in samples from all locations sampled except the control soil sampling area.

SAMPLING

Thirteen soil samples were collected from eight locations at this site. Sampling locations are described on Table 1 and shown in Figure 2. Analytical results for these samples are summarized on Table 2. Complete analytical results are included as Appendix A. Full organic compound and metals scans and analysis for cyanide were requested for only one sample (H-01S) collected at this site. PCB analyses, only, were requested for the other twelve samples. Surface water and sediment samples were not collected because no surface water, streams or ditches were located in the dump site area. Ground water samples were not collected because there were no potable wells in the area. All area residents are on the city water system.

SUMMARY

PCBs (concentration range of 51 ug/kg to 2,600 ug/kg) were detected in samples from seven of the eight sampling locations at this site. PCBs were not detected in the control soil sample. In every case where samples were collected from two depths (0-1 feet and 2-3 feet), the highest concentrations occurred in the 0-1 foot sample. The PCB most commonly detected and that which usually occurred at the highest concentration was PCB-1248.

Other analyses requested for sample H-01S included metals, extractable organic compounds, purgeable organic compounds, pesticides, and cyanide. Metals concentrations in this soil sample were consistent with those detected in soil samples collected at three other sites in Pickens County. Major extractable organic compounds detected were two siloxanes at a combined estimated concentration of 200 ug/kg. There were no purgeable organic compounds or compounds detected by the pesticide scan (other than PCB) detected in this sample. Cyanide (0.37 mg/kg) was detected in this sample.

DATA DISCUSSION

PCBs were detected in samples from seven of the eight sampling locations at this site. None were detected at the control soil sampling location (H-13S). The PCBs detected included PCB-1254, PCB-1248, and PCB-1260. PCB-1248 was detected in samples from all seven locations at a concentration range of 110 ug/kg to 2,600 ug/kg. The two highest concentrations were 2,500 ug/kg (H-01S in the middle of the Hedden garden) and 2,600 ug/kg (H-07S at the common corner of the Hedden-Couch-Lay properties. PCB-1260 was detected at six of the seven sampling locations at a concentration range of 51 ug/kg to 330 ug/kg. PCB-1254 was detected in only two samples (310 ug/kg in H-09S and 220 ug/kg in H-11S). In every case where samples were collected from two depths (0-1 feet and 2-3 feet), the highest concentrations occurred in the 0-1 foot sample.

Sample H-01S was the only sample for which analyses other than PCBs were requested. These other analyses included metals, extractable organic compounds, pesticides, and cyanide. Fourteen metals were detected in this sample. In general, concentrations of these metals were consistent with those detected in samples from three other sites in Pickens County (John Trotter Site, Parsons Dump Site, and Hillcrest Site). Five extractable organic compounds were detected in this sample (two siloxanes at a total estimated concentration of 200 ug/kg and three isomers of tetrachlorobiphenyl at a total estimated concentration of 10 ug/kg). There were no purgeable organic compounds or compounds detected by the pesticide scan (other than PCB) detected in this sample. Cyanide (0.37 mg/kg) was detected in this sample.

METHODOLOGY

All sampling and sample handling procedures were as prescribed in the standard operating procedures of the Environmental Compliance Branch, ESD (1). All laboratory analyses were in accordance with the standard operating procedures of the Analytical Support Branch (2).

REFERENCES

1. Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual, U. S. Environmental Protection Agency, Region IV, Environmental Services Division, April 1, 1986.

2. Analytical Support Branch Operations and Quality Control Manual, U. S. Environmental Protection Agency, Region IV, Environmental Services Division, June 1, 1985.

TABLE 1
SAMPLING LOCATIONS
HEDDEN SUMP SITE
SANGAMO PCB STUDY
PICKENS, SOUTH CAROLINA

Sampling Location Number	Sample and Sampling Location Description
H-01S	0-1 feet deep soil sample from middle of Hedden garden.
H-02S	2-3 feet deep soil sample from middle of Hedden garden.
H-03S	2-3 feet deep soil sample from east end of Hedden garden.
H-04S	2-3 feet deep soil sample from west end of Hedden garden.
H-05S	0-1 feet deep soil sample from middle of Lay garden.
H-06S	2-3 feet deep soil sample from middle of Lay garden.
H-07S	0-1 feet deep soil sample from the point where the Hedden, Couch, and Lay properties join.
H-08S	2-3 feet deep soil sample from same location as H-07S.
H-09S	0-1 feet deep soil sample from Hedden front yard.
H-10S	2-3 feet deep soil sample from Hedden front yard.
H-11S	0-1 feet deep soil sample from middle of Lay back yard.
H-12S	2-3 feet deep soil sample from middle of Lay back yard.
H-13S	0-1 feet deep control soil sample from west side of western leg of City View Circle.

TABLE 2
ANALYTICAL DATA SUMMARY
HEDDEN DUMP SITE
PICKENS, SC

	H-01S MID HED GARDEN 10/29/86 0815	H-02S MID HED GARDEN 10/29/86 0820	H-03S E HED GARDEN 10/29/86 0825	H-04S W HED GARDEN 10/29/86 0830	H-09S MID HED YARD 10/29/86 0945	H-10S MID HED YARD 10/29/86 0950	H-05S MID LAY GARDEN 10/29/86 0835	H-06S MID LAY GARDEN 10/29/86 0840	H-11S MID LAY YARD 10/29/86 1000	H-12S MID LAY YARD 10/29/86 1005	H-07S H-C-L CORNER 10/29/86 0900	H-08S H-C-L CORNER 10/29/86 0900	H-13S CONTROL SOIL 10/29/86 1015
INORGANIC ELEMENT/COMPOUND	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
BARIUM	92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	83	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
STRONTIUM	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TITANIUM	750	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	160	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	140	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	0.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ALUMINUM	75000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	430	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CALCIUM	2400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM	760	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRON	66000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELECTED CHLORINATED COMPOUNDS	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
PCB-1254 (AROCLOR 1254)	--	--	--	--	310J	--	--	--	220J	--	--	--	--
PCB-1248 (AROCLOR 1248)	2500C	220J	110J	120J	130J	--	140J	--	290J	--	2600J	140J	--
PCB-1260 (AROCLOR 1260)	330C	--	63J	51J	130J	--	170	--	270	--	--	--	--
EXTRACTABLE ORGANIC COMPOUNDS	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
OCTAMETHYLCYCLOTETRASILOXANE	100JN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DECAMETHYLCYCLOPENTASILOXANE	100JN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TETRACHLOROBIPHENYL (2 ISOMERS)	10JN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CONVENTIONAL PARAMETERS	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
CYANIDE	0.37	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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FOOTNOTES
NA - NOT ANALYZED
J - ESTIMATED VALUE
N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
-- - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED

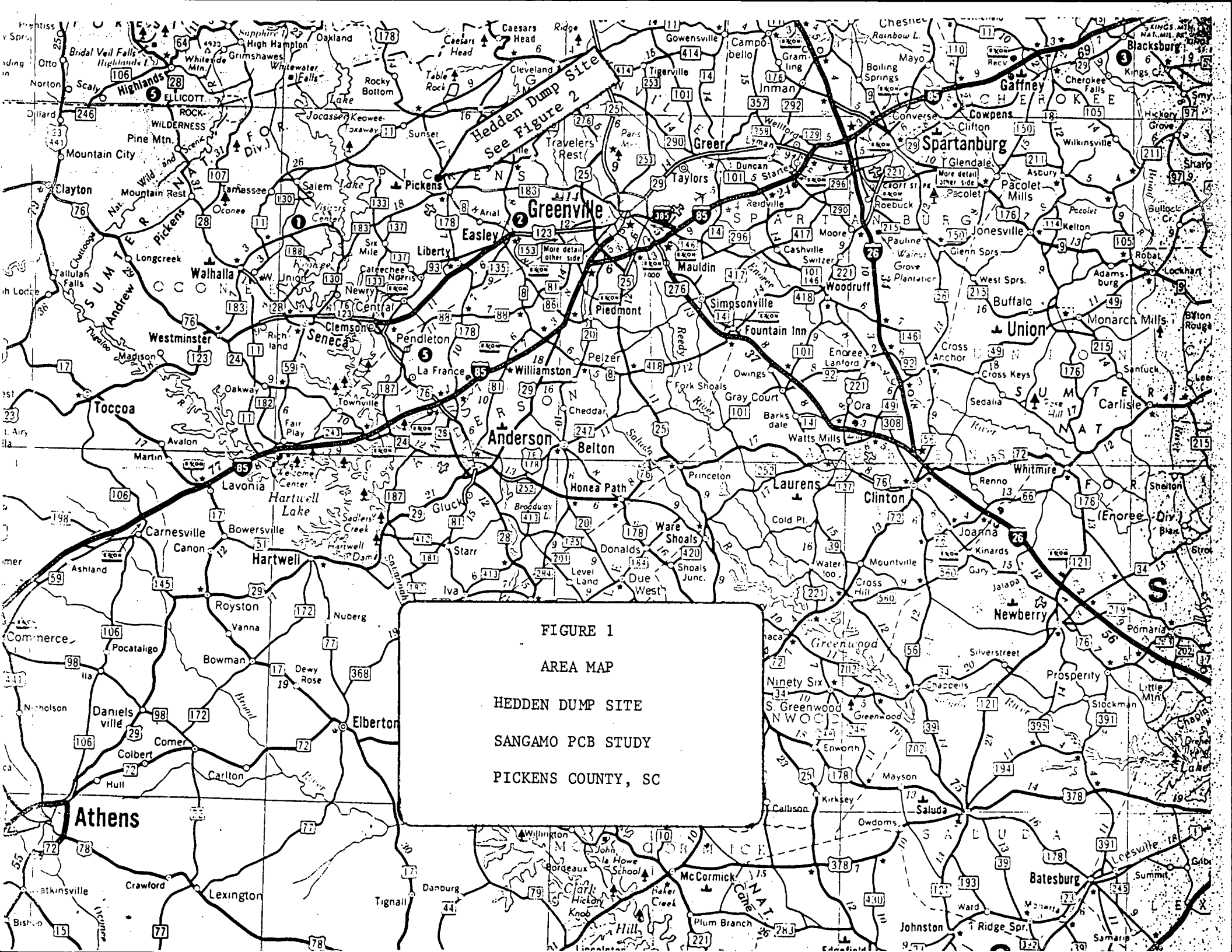

FIGURE 1

AREA MAP

HEDDEN DUMP SITE

SANGAMO PCB STUDY

PICKENS COUNTY, SC

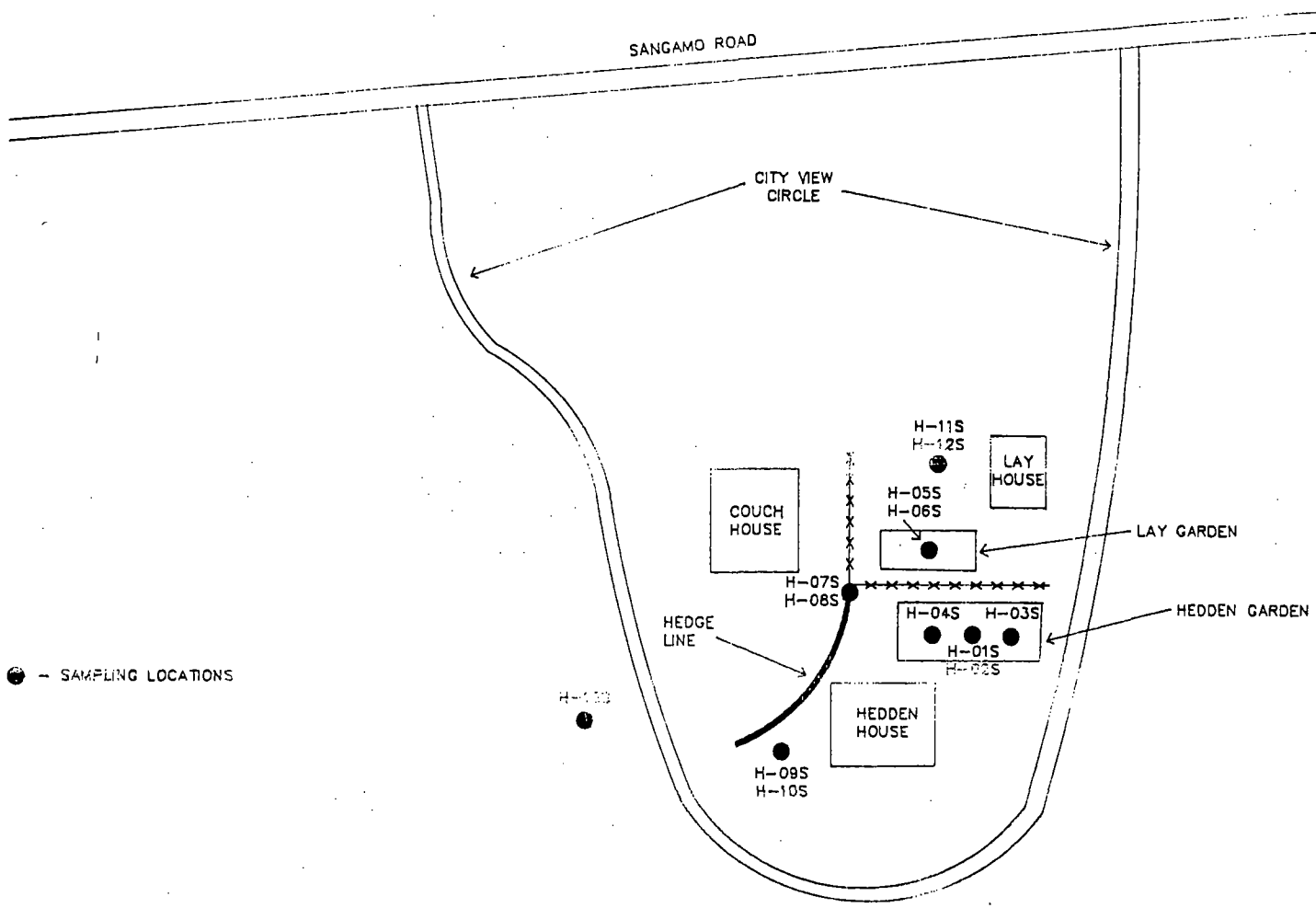

FIGURE 2
HEDDEN DUMP SITE
SKETCH(NTS)
PICKENS, SOUTH CAROLINA